



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/512,132	05/02/2005	Alexander Hannay	884A.0060.U1(US)	2155
29683	7590	05/16/2007	EXAMINER	
HARRINGTON & SMITH, PC			LEIBY, CHRISTOPHER E	
4 RESEARCH DRIVE			ART UNIT	PAPER NUMBER
SHELTON, CT 06484-6212			2609	
			MAIL DATE	DELIVERY MODE
			05/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/512,132	HANNAY, ALEXANDER	
	Examiner	Art Unit	
	Christopher E. Leiby	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10/21/2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-43 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 21 October 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/21/2004.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

1. The information disclosure statement received on October 21st, 2004 has been considered.
2. Claims 1-43 are pending

Drawing Objections

3. The drawings are objected to because figure 4 acknowledges that when keys 135 and 136 are both selected the direction is northeast. However the correct direction according to the application should be southeast. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-12 and 14-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Levy (US Patent 5,973,621).

Regarding claim 1, Levy discloses a hand portable device (*column 1 lines 7-9*) comprising: a user input device comprising a plurality of sensors in an array for tactile actuation by a user (*column 4 lines 48-49*; control means (*column 3 line 17 “electronics” figure 14 reference PIC 16C84*) responsive to the actuation of a sensor by itself or the simultaneous actuation of a pair of adjacent sensors; wherein the control means produces one of N control signals upon actuation of a sensor by itself or the simultaneous actuation of an adjacent pair of sensors (*column 3 lines 17-40*); and wherein each of the N control signals belong to a first set of control signals (*figure 7a “letters”*) or a second set of control signals (*figure 7a “numbers”*), wherein each sensor of the array is associated with only one of the control signals of the first set and wherein each of the control signals of the second set is associated with an adjacent pair of sensors in the array, but each adjacent pair of sensors (*switches*) is not associated with a control signal of the second set (*column 1 lines 12-18 and abstract*).

Regarding claim 2, Levy discloses a hand portable, wherein the plurality of sensors comprises a first set of sensors consisting of a first sensor adjacent a second

sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and a second set of sensors consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors (*figure 10: Switch s_{00} is seen as a first sensor creating a first pair of sensors adjacent to switch s_{01} and using the same logic creating also second through fourth pairs of sensors and first and second sets*).

Regarding **claim 3**, Levy discloses a hand portable device wherein the pairs of sensors are located and arranged to be simultaneously actuated by a user using one digit (*column 2 lines 55-67 figure 10 and figure 12*).

Regarding **claim 4**, Levy discloses a hand portable device wherein the first set of sensors (switches) is adjacent the second set of sensors (*figure 10: as written above the switches are arranged in a matrix and therefor any set of sensor inside of the matrix are considered to be adjacent to each other*).

Regarding **claim 5**, Levy discloses a hand portable device, wherein the control means is responsive to user actuation of a respective one of at least four of the six sensors to provide a respective one of four different control signals and is responsive to user actuation of a respective one of the first, second, third and fourth pairs of sensors to provides for a respective one of an additional four different control signals (*column 3 lines 17-19 figure 7a, 10,12: keys have associated switches which act as sensors responding to actuation to provide specific controlled output like letters or numbers*).

Regarding **claim 6**, Levy discloses a hand portable device, wherein the control means produces:

- (a) a first control signal (*figure 7a letter K*) in response to the actuation of a second sensor (*figure 7a letter K; pressing the key labeled "k" actuates the sensor switch initiated the control means PIC to produce a signal of "k"*);
- (b) a second control signal (*figure 7a letter G*) in response to the actuation of a first sensor (*figure 7a letter G*);
- (c) a third control signal (*figure 7a number 6*) in response to actuation of both the first and second sensors simultaneously (*figure 7a letters K and G*);
- (d) a fourth control signal (*figure 7a letter J*) in response to the actuation of a third sensor (*figure 7a letter J*);
- (e) a fifth control signal (*figure 7a number 5*) in response to the actuation of both the second and third sensors simultaneously (*figure 7a letters G and J*);
- (f) a sixth control signal (*figure 7a letter F*) in response to the actuation of a fifth sensor (*figure 7a letter F*);
- (g) a seventh control signal (*figure 7a number 4*) in response to the actuation of both the fifth and sixth sensors simultaneously (*figure 7a letters F and I*); and

(h) an eighth control signal (*figure 7a number 1*) in response to the actuation of both the fourth and fifth sensors simultaneously (*figure 7a letters E and F*).

Regarding **claim 7**, Levy discloses a hand portable device, wherein the control means in response to the actuation of only the fourth sensor (*figure 7a letter E*) produces the second control signal and in response to actuation of only the sixth sensor (*figure 7a letter I*) produces the fourth control signal (*figure 19 reference 112; when in navigation or directional mode of the hand portable device pressing E or I will produce the same null control signal*).

Regarding **claim 8**, Levy discloses a hand portable device, wherein the control means comprises detection means for detecting the simultaneous actuation of keys (*column 3 lines 17-19*).

Regarding **claim 9**, Levy discloses a hand portable device, wherein the plurality of sensors is a 2×3 or 3×2 array of sensors (*figure 7a: letters E, F, G, I, J, K and corresponding switches that were associated with applicant's sensors 1-6 form a 2×3 matrix*).

Regarding **claim 10**, Levy discloses a hand portable device, wherein the user input device is a keypad having first, second, third, fourth, fifth and sixth keys (*figure 7a Respectively letters G, K, J, E, F, and I*) which respectively actuate the first, second, third, fourth, fifth and sixth sensors whereby the first, second, third and fourth pairs of sensors (*figure 10 shows associated switches that are used as sensors*) have

corresponding first, second, third and fourth pairs of keys (*figure 7a Respectively 6, 5, 4, and 1*).

Regarding **claim 11**, Levy discloses a hand portable device, wherein each pair of keys are located and arranged to be simultaneously actuated by a user using one digit (*column 2 lines 55-67 figure 7a*).

Regarding **claim 12**, Levy discloses a hand portable wherein the pairs of keys are located and arranged to be actuated by a user rolling or pivoting one digit (*column 2 lines 55-67 figure 7a*).

Regarding **claim 14**, Levy discloses a hand portable wherein the first, second and third keys are arranged rectilinearly (*figure 7a keys E, F, and G are straight in line with each other “rectilinearly”*).

Regarding **claim 15**, Levy discloses a hand portable wherein the fourth, fifth and sixth keys are arranged substantially parallel to the first, second and third keys (*figure 7a keys I, J, and K are parallel to E, F, and G*).

Regarding **claim 16**, Levy discloses a hand portable wherein the first, second, third, fourth, fifth and sixth keys form an array (*figure 7a displays keys E, F, G, I, J, and K to be arranged in a matrix form which is an array*).

Regarding **claim 17**, Levy discloses a hand portable wherein the first, second, third, fourth, fifth and sixth keys occupy an area not significantly exceeding 20 mm by 15 mm (*column 3 lines 30-40*).

Regarding **claim 18**, Levy discloses a hand portable wherein the keypad comprises a 4 x 3 array of mobile telephone keys (*figure 7a letters A-C,E-F,I-K, and M-O form a 4 x 3 matrix*).

Regarding **claim 19**, Levy discloses a hand portable wherein the keypad is a typist's keypad (*figure 7a*).

Regarding **claim 20**, Levy discloses a hand portable having a data entry mode where the keypad including the plurality of keys are used to enter data wherein in said data entry mode the control means is responsive to the actuation of the first key and second key separately but not together to produce different control signals (*figure 7a pressing key "A" initiates control means to produce data A and pressing key "X" to produces a different data X*).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Levy** (US Patent 5,973,621) in view of **Prior et al** (US Patent 2001/0044317).

Regarding **claim 21 and 22**, Levy discloses a hand portable comprising the first control signal causes the element to move in a first direction, the second control signal causes the element to move in a second direction and the third control signal causes

the element to move in a third direction intermediate of the first and second directions (*column 11 lines 13-46 figures 19-20b reference 112; force sensor provides control signals corresponding to the direction of the force pushed onto 112*).

However, Levy does not disclose specifically that a display for displaying an image including an element moving in the display or specifically that notational viewing corresponds to control signals 1-3.

Prior does disclose display for displaying an image including an element moving in the display (*Detailed description paragraph 2*).

Levy does disclose that the invention is for input devices for small electronic products, particularly for communications and data entry (*column 1 Field of invention*).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made that to have an input device with cursor control, a display must be available to display an image for the cursor or element to move in including perspectives of elements.

8. **Claims 13, 23-40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy (US Patent 5,973,621) in view of IBM Technical Disclosure Bulletin, September 1983, volume 26 issue 4.**

Regarding **claim 13 and 30**, Levy discloses a hand portable wherein the first, second and third keys are arranged rectilinearly.

However, Levy does not disclose arrangement in a curvilinear way.

IBM does disclose curvilinear way to arrange keys (*figure 1*).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine Levy and IBM's key arrangement as to create different appearances for the hand portable device.

Regarding **claim 23**, Levy discloses a method of providing directional control using a force sensor to provide N different control signals (*column 11 lines 13-46 figure 19-20b reference 112*), wherein each of the N different control signals is a member of either a first set of control signals (directional) or a second different set of control signals (character), the method comprising: associating each the sensor in the array with all control signals from the first set; associating each of the control signals of the second set with a pair of sensors without associating each of the pairs of sensors with a control signal of the second set (characters); detecting when a sensor or sensors of the array are actuated; and providing the control signal associated with the detected actuated sensor(s) (*column 11 lines 13-46 figures 19-20b reference 112*).

However Levy does not disclose N different control signal using more then $N/2$ sensors but less then N.

IBM does disclose a cursor control system involving N different control signals using more then $N/2$ sensors but less then N (*figure 4*)

Therefor, it would have been obvious to one skilled in the art at the time the invention was made to combine Levy and IBM as a simpler method of sensor combination to create N way cursor directional control with keypads rather then a single key.

Regarding claim 24 and 43, Levy discloses a user input device and method for providing 8-way directional control, comprising a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and a second set of sensors, adjacent the first set of sensors, consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors (*figure 10: Switch s₀₀ is seen as a first sensor creating a first pair of sensors adjacent to switch s₀₁ and using the same logic creating also second through fourth pairs of sensors and first and second sets*); wherein user actuation of a respective one (*figure 19 reference 112*) of at least four of the six sensors provides for control in any 8 way direction.

However Levy does not disclose that wherein user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions and user actuation of a respective one of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions.

IBM does disclose user actuation of a respective one of at least four of the five sensors provides for control in a respective one of four different directions and user actuation of a respective one of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions.

Therefor, it would have been obvious to one skilled in the art at the time the invention was made to combine Levy and IBM as a simpler method of sensor

combination to create 8 way cursor directional control with keypads rather than a single key.

Regarding **claim 25**, Levy discloses a user input device wherein the pairs of sensors are located and arranged to be simultaneously actuated by a user using one digit (*column 2 lines 55-67 figure 10 and figure 12*).

Regarding **claim 26**, Levy discloses a user input device, wherein the plurality of sensors is a 2×3 or 3×2 array of sensors (*figure 7a: letters E, F, G, I, J, K and corresponding switches that were associated with applicant's sensors 1-6 form a 2×3 matrix*).

Regarding **claim 27**, Levy discloses a user input device, wherein the user input device is a keypad having first, second, third, fourth, fifth and sixth keys (*figure 7a Respectively letters G, K, J, E, F, and I*) which respectively actuate the first, second, third, fourth, fifth and sixth sensors whereby the first, second, third and fourth pairs of sensors (*figure 10 shows associated switches that are used as sensors*) have corresponding first, second, third and fourth pairs of keys (*figure 7a Respectively 6, 5, 4, and 1*).

Regarding **claim 28**, Levy discloses a user input device, wherein each pair of keys are located and arranged to be simultaneously actuated by a user using one digit (*column 2 lines 55-67 figure 7a*).

Regarding **claim 29**, Levy discloses a user input wherein the pairs of keys are located and arranged to be actuated by a user rolling or pivoting one digit (*column 2 lines 55-67 figure 7a*).

Regarding **claim 30** Levy discloses a hand portable device, wherein the control means in response to the actuation of only the fourth sensor (*figure 7a letter E*) produces the second control signal and in response to actuation of only the sixth sensor (*figure 7a letter I*) produces the fourth control signal (*figure 19 reference 112; when in navigation or directional mode of the hand portable device pressing E or I will produce the same null control signal*).

Regarding **claim 31**, Levy discloses a user input wherein the first, second and third keys are arranged rectilinearly (*figure 7a keys E, F, and G are straight in line with each other “rectilinearly”*).

Regarding **claim 32**, Levy discloses a user input wherein the fourth, fifth and sixth keys are arranged substantially parallel to the first, second and third keys (*figure 7a keys I, J, and K are parallel to E, F, and G*).

Regarding **claim 33**, Levy discloses a user input wherein the first, second, third, fourth, fifth and sixth keys form an array (*figure 7a displays keys E, F, G, I, J, and K to be arranged in a matrix form which is an array*).

Regarding **claim 34**, Levy discloses a user input wherein the first, second, third, fourth, fifth and sixth keys occupy an area not significantly exceeding 20 mm by 15 mm (*column 3 lines 30-40*).

Regarding **claim 35**, Levy discloses a user input wherein the keypad comprises a 4 x 3 array of mobile telephone keys (*figure 7a letters A-C,E-F,I-K, and M-O form a 4 x 3 matrix*).

Regarding **claim 36**, Levy discloses a user input wherein the keypad is a typist's keypad (*figure 7a*).

Regarding **claim 37**, Levy discloses a hand portable device, wherein the control means produces:

- (a) a first control signal (*figure 7a letter K*) in response to the actuation of a second sensor (*figure 7a letter K; pressing the key labeled "k" actuates the sensor switch initiated the control means PIC to produce a signal of "k"*);
- (b) a second control signal (*figure 7a letter G*) in response to the actuation of a first sensor (*figure 7a letter G*);
- (c) a third control signal (*figure 7a number 6*) in response to actuation of both the first and second sensors simultaneously (*figure 7a letters K and G*);
- (d) a fourth control signal (*figure 7a letter J*) in response to the actuation of a third sensor (*figure 7a letter J*);
- (e) a fifth control signal (*figure 7a number 5*) in response to the actuation of both the second and third sensors simultaneously (*figure 7a letters G and J*);
- (f) a sixth control signal (*figure 7a letter F*) in response to the actuation of a fifth sensor (*figure 7a letter F*);
- (g) a seventh control signal (*figure 7a number 4*) in response to the actuation of both the fifth and sixth sensors simultaneously (*figure 7a letters F and I*); and

(h) an eighth control signal (*figure 7a number 1*) in response to the actuation of both the fourth and fifth sensors simultaneously (*figure 7a letters E and F*).

Regarding **claim 38**, Levy discloses a hand portable device, wherein the control means in response to the actuation of only the fourth sensor (*figure 7a letter E*) produces the second control signal and in response to actuation of only the sixth sensor (*figure 7a letter I*) produces the fourth control signal (*figure 19 reference 112; when in navigation or directional mode of the hand portable device pressing E or I will produce the same null control signal*).

Regarding **claim 39**, Levy discloses a hand portable device, wherein the control means comprises detection means for detecting the simultaneous actuation of keys (*column 3 lines 17-19*).

Regarding **claim 40**, Levy discloses a hand portable having a data entry mode where the keypad including the plurality of keys are used to enter data wherein in said data entry mode the control means is responsive to the actuation of the first key and second key separately but not together to produce different control signals (*figure 7a pressing key "A" initiates control means to produce data A and pressing key "X" to produces a different data X*).

9. Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Levy** (US Patent 5,973,621) in view of **IBM Technical Disclosure Bulletin**, September 1983, volume 26 issue 4 and in further view of **Prior et al** (US Patent 2001/0044317).

Regarding claim 41 and 42, Levy discloses a hand portable comprising the first control signal causes the element to move in a first direction, the second control signal causes the element to move in a second direction and the third control signal causes the element to move in a third direction intermediate of the first and second directions (*column 11 lines 13-46 figures 19-20b reference 112; force sensor provides control signals corresponding to the direction of the force pushed onto 112*).

However, Levy does not disclose specifically that a display for displaying an image including an element moving in the display or specifically that notational viewing corresponds to control signals 1-3.

Prior does disclose display for displaying an image including an element moving in the display (Detailed description paragraph 2).

Levy does disclose that the invention is for input devices for small electronic products, particularly for communications and data entry (*column 1 Field of invention*).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made that to have an input device with cursor control, a display must be available to display an image for the cursor or element to move in including perspectives of elements.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lemley et al. (US Patent 7,206,599) teaches a mobile telephone with cursor control built into the keys.

Schein et al. (US Patent 6,075,575) teaches remote control device with cursor navigation.

IBM Technical Disclosure Bulletin US Volume number 26 issue number 7B page number 3746-3747 teaches the use of cursor control with multiple sensors on a single key.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Leiby whose telephone number is 571-270-3142. The examiner can normally be reached on 8-4 m-f.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alex Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alexander Eisen
SPE
Art Unit 2609

May 2, 2007